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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			HSU, JONI	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/759,504	Applicant(s) MEHTA ET AL.	
	Examiner Joni Hsu	Art Unit 2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-56 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/16/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on January 16, 2004 was filed after the mailing date of the application on January 16, 2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-6, 10-20, 24-34, 38-48, and 52-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US005953020A) in view of Bogin (US006157397A).

5. With regard to Claim 1, Wang describes a method of determining buffer management information for a data processing system (*display FIFO memory management system*, Col. 3, lines 47-53) comprising determining a buffer drain rate based on a first display mode of the data processing system (*for each given display mode, the draining rate of the display FIFO memory for a screen refresh is a constant value*, Col. 9, lines 24-31); and calculating one or more buffer management parameters based on at least the buffer drain rate (*drain rate determinator 80 includes a counter/timer precision determinator 84 that varies the resolution of the counter/time 82 dependent upon the determined constant drain rate information*, Col. 5, lines 58-61).

However, Wang does not teach determining a latency parameter based on a first system configuration of the data processing system, the latency parameter representing a latency time amount between a display data request and delivery of display data to a display buffer; and calculating one or more buffer management parameters based on at least the latency parameter. However, Bogin describes a method of determining buffer management information for a data processing system comprising determining a latency parameter based on a first system configuration of the data processing system, the latency parameter representing a latency time amount between a display data request and delivery of display data to a display buffer; and calculating one or more buffer management parameters based on at least the latency parameter (Col. 4, lines 35-53).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the device of Wang to include determining a latency parameter based on a first system configuration of the data processing system, the latency parameter representing a latency time amount between a display data request and delivery of display data to a display buffer; and calculating one or more buffer management parameters based on at least the latency parameter as suggested by Bogin because Bogin suggests that the buffer management parameter must be based on the latency parameter in order to have read and write coherency (Col. 6, lines 53-59).

6. With regard to Claim 2, Wang describes determining a buffer fill rate based on a buffer configuration (*the emulation of the drain and fill time of display FIFO memory 70 is accomplished by determining the number of memory clock cycles based on the stored displayed mode data*, Col. 8, lines 3-8; Col. 9, lines 26-31); and calculating at least one of the one or more buffer management parameters based on the buffer fill rate (*generates the display memory read request signal 62 based on the emulation of the drain and fill time of the display FIFO memory 70*, Col. 5, lines 1-3).

7. With regard to Claim 3, Wang describes calculating at least one of the one or more buffer management parameters based on a buffer size (*read and write pointers can be compared to determine how many display FIFO entries are leftover in the display FIFO*, Col. 4, lines 22-28; *compares the translated read/write pointer information to generate a display memory read request signal 62*, Col. 4, lines 38-42).

8. With regard to Claim 4, Wang describes that the one or more buffer management parameters comprise a watermark level (Col. 6, lines 14-17).

9. With regard to Claim 5, Wang describes that the watermark level comprises a lower bound of a desired watermark level range (*low watermark threshold value*, Col. 9, lines 17-23).

10. With regard to Claim 6, Wang describes that the watermark level comprises an upper bound of a desired watermark level range (*high watermark*, Col. 9, lines 10-16).

11. With regard to Claim 10, Wang describes detecting a change from the first display mode to a second display mode; and calculating at least one of the one or more buffer management parameters based on the second display mode (*check whether the display mode information entered in block 128 has changed, if the display mode information has changed, a new drain rate is determined*, Col. 8, lines 44-50).

12. With regard to Claim 11, Wang describes detecting a change from the first system configuration to a second system configuration (*accommodate varying screen display modes such as if a user wishes to connect a different screen that may have higher resolution*, Col. 5, lines 53-57); and calculating at least one of the one or more buffer management parameters based on the second system configuration (*programmable FIFO emulator 72 receives the drain rate data and resolution parameter data 86 and stores the drain rate in register 74 and*

programs the programmable counter/timer 82 accordingly, programmable FIFO emulator 72 predicts the number of entries left in the display FIFO memory 70 before a complete FIFO memory drain occurs, Col. 6, lines 7-13).

13. With regard to Claim 12, Wang does not teach that the latency parameter represents a maximum expected latency time amount for the first system configuration of the data processing system. However, Bogin describes that the first system configuration does not require a guaranteed maximum latency, and the second system configuration does (Col. 3, lines 19-34). Therefore, the latency parameter represents a maximum expected latency time amount for a system configuration of the data processing system. This would be obvious for the same reasons given in the rejection for Claim 1.

14. With regard to Claim 13, Wang describes that the first display mode is characterized by at least one of a first refresh rate (*display modes will dictate the refresh rate, Col. 4, lines 16-18*), a first display resolution (*accommodate varying screen display modes such as if a user wishes to connect a different screen that may have higher resolution, Col. 5, lines 53-57*), and a first color depth (*display mode data includes color depth data, Col. 10, lines 19-21*).

15. With regard to Claim 14, Wang does not teach that the first system configuration is characterized at least by a buffer memory type. However, Bogin describes that the first system configuration is characterized at least by a buffer memory type (*first mode, write to the system*

memory 114, Col. 5, lines 57-65; second mode, destined to the aperture memory 107 region of the system memory 114, Col. 6, lines 11-18).

It would have been obvious to one ordinary skill in the art at the time of invention by applicant to modify the device of Wang so that the first system configuration is characterized at least by a buffer memory type as suggested by Bogin because Bogin suggests that the buffer memory type determines whether the access is lower priority or higher priority (Col. 3, lines 17-34).

16. With regard to Claim 15, Wang describes an apparatus comprising a display part (14, Figure 1) which directs movement of display data, the display part including a buffer (30) to store display data to be displayed on a display screen (40) (Col. 4, lines 2-16); and a data computing system configured to calculate one or more buffer management parameters based on a buffer drain rate based on a first display mode; wherein the buffer drain rate represents a rate at which the display data is read from the buffer (Col. 9, lines 26-31; Col. 5, lines 58-61).

However, Wang does not teach calculating one or more buffer management parameters based on a latency parameter based on a first system configuration; wherein the latency parameter represents a latency time amount between a display data request and delivery of display data to the buffer. However, Bogin describes calculating one or more buffer management parameters based on a latency parameter based on a first system configuration; wherein the latency parameter represents a latency time amount between a display data request and delivery of display data to the buffer (Col. 4, lines 35-53), as discussed above relative to Claim 1.

17. With regard to Claim 16, Claim 16 is similar in scope to Claim 2, and therefore is rejected under the same rationale.

18. With regard to Claim 17, Claim 17 is similar in scope to Claim 3, and therefore is rejected under the same rationale.

19. With regard to Claim 18, Claim 18 is similar in scope to Claim 4, and therefore is rejected under the same rationale.

20. With regard to Claim 19, Claim 19 is similar in scope to Claim 5, and therefore is rejected under the same rationale.

21. With regard to Claim 20, Claim 20 is similar in scope to Claim 6, and therefore is rejected under the same rationale.

22. With regard to Claim 24, Claim 24 is similar in scope to Claim 10, and therefore is rejected under the same rationale.

23. With regard to Claim 25, Claim 25 is similar in scope to Claim 11, and therefore is rejected under the same rationale.

24. With regard to Claim 26, Claim 26 is similar in scope to Claim 12, and therefore is rejected under the same rationale.

25. With regard to Claim 27, Claim 27 is similar in scope to Claim 13, and therefore is rejected under the same rationale.

26. With regard to Claim 28, Claim 28 is similar in scope to Claim 14, and therefore is rejected under the same rationale.

27. With regard to Claim 29, Claim 29 is similar in scope to Claim 1, except that Claim 29 is for an article comprising a storage medium which stores computer-executable instructions, the instructions causing a computer to perform the method of Claim 1. Wang describes an article comprising a storage medium which stores computer-executable instructions, the instructions causing a computer to perform the method (Col. 5, lines 26-39). Therefore, Claim 29 is rejected under the same rationale as Claim 1.

28. With regard to Claim 30, Claim 30 is similar in scope to Claim 2, and therefore is rejected under the same rationale.

29. With regard to Claim 31, Claim 31 is similar in scope to Claim 3, and therefore is rejected under the same rationale.

30. With regard to Claim 32, Claim 32 is similar in scope to Claim 4, and therefore is rejected under the same rationale.

31. With regard to Claim 33, Claim 33 is similar in scope to Claim 5, and therefore is rejected under the same rationale.

32. With regard to Claim 34, Claim 34 is similar in scope to Claim 6, and therefore is rejected under the same rationale.

33. With regard to Claim 38, Claim 38 is similar in scope to Claim 10, and therefore is rejected under the same rationale.

34. With regard to Claim 39, Claim 39 is similar in scope to Claim 11, and therefore is rejected under the same rationale.

35. With regard to Claim 40, Claim 40 is similar in scope to Claim 12, and therefore is rejected under the same rationale.

36. With regard to Claim 41, Claim 41 is similar in scope to Claim 13, and therefore is rejected under the same rationale.

37. With regard to Claim 42, Claim 42 is similar in scope to Claim 14, and therefore is rejected under the same rationale.

38. With regard to Claim 43, Claim 43 is similar in scope to Claim 15, and therefore is rejected under the same rationale.

39. With regard to Claim 44, Claim 44 is similar in scope to Claim 16, and therefore is rejected under the same rationale.

40. With regard to Claim 45, Claim 45 is similar in scope to Claim 17, and therefore is rejected under the same rationale.

41. With regard to Claim 46, Claim 46 is similar in scope to Claim 18, and therefore is rejected under the same rationale.

42. With regard to Claim 47, Claim 47 is similar in scope to Claim 19, and therefore is rejected under the same rationale.

43. With regard to Claim 48, Claim 48 is similar in scope to Claim 20, and therefore is rejected under the same rationale.

44. With regard to Claim 52, Claim 52 is similar in scope to Claim 24, and therefore is rejected under the same rationale.

45. With regard to Claim 53, Claim 53 is similar in scope to Claim 25, and therefore is rejected under the same rationale.

46. With regard to Claim 54, Claim 54 is similar in scope to Claim 26, and therefore is rejected under the same rationale.

47. With regard to Claim 55, Claim 55 is similar in scope to Claim 27, and therefore is rejected under the same rationale.

48. With regard to Claim 56, Claim 56 is similar in scope to Claim 28, and therefore is rejected under the same rationale.

49. Claims 7, 9, 21, 23, 35, 37, 49 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US005953020A) and Bogin (US006157397A) in view of Shimomura (US006600492B1).

50. With regard to Claim 7, Wang and Bogin are relied upon for the teachings as discussed above relative to Claim 1.

However, Wang and Bogin do not teach that the one or more buffer management parameters comprise a burst length. However, Shimomura describes that the one or more buffer management parameters (Col. 16, lines 27-37) comprise a burst length (Col. 21, lines 4-23).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Wang and Bogin so that the one or more buffer management parameters comprise a burst length as suggested by Shimomura because Shimomura suggests that adjusting the burst length can reduce the amount of power consumption (Col. 21, lines 6-11).

51. With regard to Claim 9, Wang does not teach that the burst length comprises an upper bound of a desired burst length range. However, Shimomura describes that the burst length comprises an upper bound of a desired burst length range (Col. 21, lines 12-23, *threshold value is updated by using a maximum number of access cycles obtained from the burst-length table* 13500, Col. 21, lines 33-40).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the device of Wang so that the burst length comprises an upper bound of a desired burst length range as suggested by Shimomura because Shimomura suggests that the larger the burst length, the more the power consumption is reduced (Col. 21, lines 6-11), and therefore the system needs to know the upper bound of the desired burst length range.

52. With regard to Claim 21, Claim 21 is similar in scope to Claim 7, and therefore is rejected under the same rationale.

53. With regard to Claim 23, Claim 23 is similar in scope to Claim 9, and therefore is rejected under the same rationale.

54. With regard to Claim 35, Claim 35 is similar in scope to Claim 7, and therefore is rejected under the same rationale.

55. With regard to Claim 37, Claim 37 is similar in scope to Claim 9, and therefore is rejected under the same rationale.

56. With regard to Claim 49, Claim 49 is similar in scope to Claim 21, and therefore is rejected under the same rationale.

57. With regard to Claim 51, Claim 51 is similar in scope to Claim 23, and therefore is rejected under the same rationale.

58. Claims 8, 22, 36, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US005953020A), Bogin (US006157397A), and Shimomura (US006600492B1) in view of Ashburn (US006628292B1).

59. With regard to Claim 8, Wang, Bogin, and Shimomura are relied upon for the teachings as discussed above relative to Claim 7.

However, Wang, Bogin, and Shimomura do not teach that the burst length comprises a lower bound of a desired burst length range. However, Ashburn describes that the burst length comprises a lower bound of a desired burst length range (*minimum burst length*, Col. 2, lines 35-46).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the devices of Wang, Bogin, and Shimomura so that the burst length comprises a lower bound of a desired burst length range as suggested by Ashburn because Ashburn suggests that the system needs to know the minimum burst length that can create a free command cycle in order to increase memory bandwidth (Col. 2, lines 24-27, 36-38).

60. With regard to Claim 22, Claim 22 is similar in scope to Claim 8, and therefore is rejected under the same rationale.

61. With regard to Claim 36, Claim 36 is similar in scope to Claim 8, and therefore is rejected under the same rationale.

62. With regard to Claim 50, Claim 50 is similar in scope to Claim 22, and therefore is rejected under the same rationale.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joni Hsu whose telephone number is 571-272-7785. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER